



*Tecumseh*

# TC Series Compressor Reference Guide

*Cooling for a Better Tomorrow™*

TC

Light Commercial Refrigeration Applications

[www.tecumseh.com](http://www.tecumseh.com)

# TC

## Built for Today. Ready for Tomorrow.

Throughout its history, Tecumseh Products Company has been a leader in providing customers with efficient and reliable products for commercial and residential refrigeration and air conditioning applications. As a result, equipment manufacturers, wholesale distributors and service contractors continue to demand Tecumseh compressors, condensing units and genuine replacement parts for their specific needs. Following on the path of the current platforms, the TC series compressor delivers best-in-class efficiency, a smaller size envelope and Tecumseh's industry known standard for reliability.

### PERFORMANCE

Suction and discharge systems combined with new motors and refrigerant fluid handling provides improved compressor efficiency.

### VERSATILE

Industry standard suction, discharge and process connections facilitate ease of installation and serviceability.

### PROVEN RELIABILITY

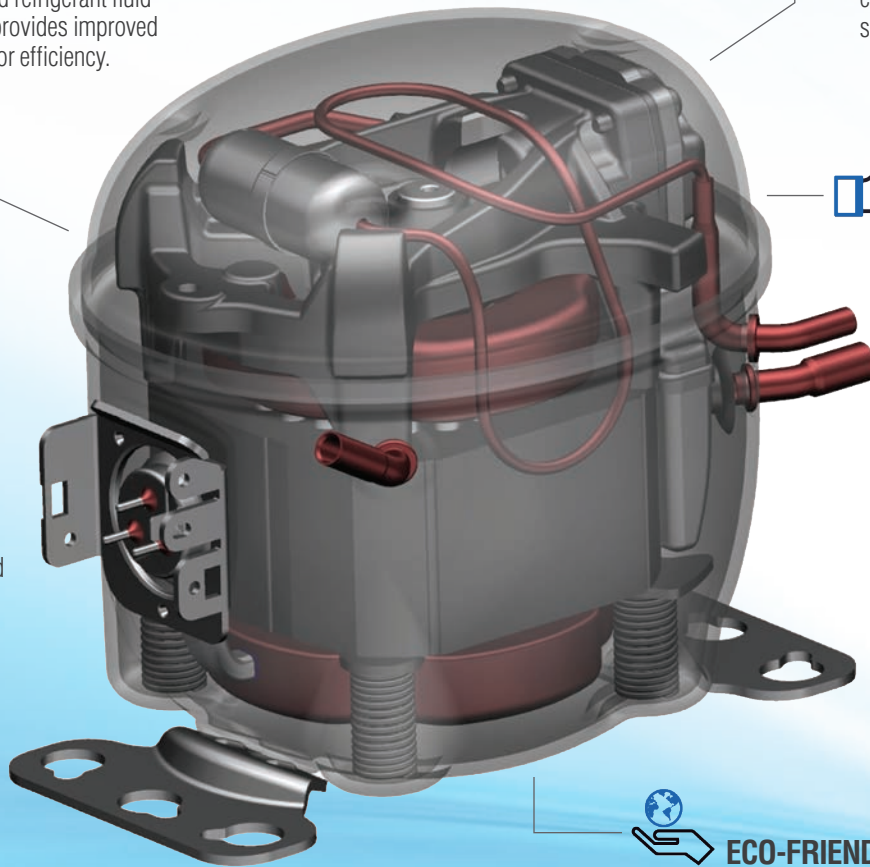
A battery of internal and external performance and reliability tests were conducted on the TC prior to releasing any samples for customer testing. Feedback from customer testing also validates the performance and reliability of the TC design.

### COMPACTNESS

Up to 15% lower in height when compared to comparable compressor offerings.

### ECO-FRIENDLY

Designed for optimum performance with "green" hydrocarbon refrigerant R600a (isobutene) and R290 (propane)



# Tecumseh

*Cooling For a Better Tomorrow™*

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## Introduction

### Product Overview

The TC Series compressor is designed for LBP and L/MBP applications. Compressor models are available for use with refrigerant R290 (propane) in capacities ranging from 300 to 1,500 Btu/h (for LBP and L/MBP), from 2,000 to 4,000 Btu/h (for M/HBP).



### Why TC?

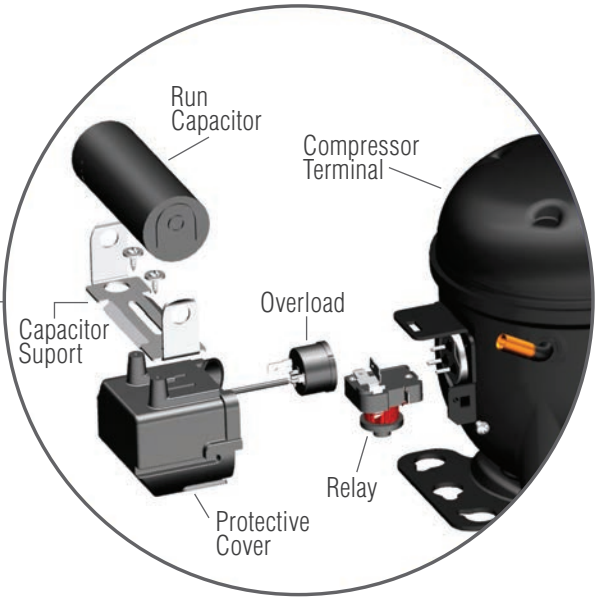
Tecumseh is pleased to announce the availability of the TC, a high efficiency compressor designed specifically for light commercial refrigeration applications. The TC series is “Best-in-Class” with respect to performance, energy efficiency and physical size.

#### **The TC series compressor meets two (2) important market needs:**

- ▶ It is optimized for use with eco-friendly refrigerant R290 (propane).
- ▶ The expanded L/MBP operating range allows standardized use across beverage cooler and freezer applications.

## Connection Box

**TPCo**  
Protective Cover  
**702-10012**



# TC Compressor Capacity Range and Performance

## R290 Compressor Performance - LBP

Model	Rating Point	Cooling Capacity			Efficiency (EER / COP)			Voltage / Frequency (V / Hz)	Motor Type	Displacement		Weight	
		Btu/h	W	Kcal/h	Btu/Wh	W/W	Kcal/Wh			cm <sup>3</sup>	kg	lb	
TC1410U-DS7C	1	1130	331	285	5.82	1.71	1.47	115-127/60	PTCCSR/PTCSCR*	6.06	8.7	19.2	
TC1410U-ES7C**	1	1160	340	293	5.95	1.74	1.50	220/60	PTCCSR/PTCSCR*	6.06	8.5	18.7	
TC1413U-DS7C	1	1330	390	335	5.78	1.69	1.45	115-127/60	PTCCSR/PTCSCR*	6.93	8.8	19.4	
TC1413U-ES7C**	1	1330	390	335	5.95	1.74	1.50	220/60	PTCCSR/PTCSCR*	6.93	8.5	18.7	

NOTE: Information for internal reference only.

\*Motor Type: Optional

\*\*Model: Already developed, but values can be adjusted

## R290 Compressor Performance - L/MBP

Model	Rating Point	Cooling Capacity			Efficiency (EER / COP)			Voltage / Frequency (V / Hz)	Motor Type	Displacement		Weight	
		Btu/h	W	Kcal/h	Btu/Wh	W/W	Kcal/Wh			cm <sup>3</sup>	kg	lb	
TCW330U-DS6B**	1	300	88	76	4.21	1.23	1.06	115-127/60	RSIR/CSIR*	1.83	8.5	18.7	
	2	667	195	168	9.00	2.64	2.26						
TCW350U-DS6B	1	500	147	126	4.90	1.44	1.24	115-127/60	RSIR/CSIR*	2.72	8.3	18.3	
	2	1050	308	265	7.87	2.31	1.98						
TCW360U-LS6A	1	600	176	151	4.76	1.40	1.20	115/60	RSIR/CSIR*	3.14	8.3	18.3	
	2	1235	362	311	7.50	2.20	1.89						
TCW380U-DS6B	1	800	234	202	5.21	1.53	1.31	115-127/60	RSIR/CSIR*	4.19	8.5	18.7	
	2	1640	481	414	7.80	2.28	1.97						
TCW390U-LS6B**	1	875	256	221	5.21	1.53	1.31	115/60	RSIR/CSIR*	4.75	8.5	18.7	
	2	1840	539	464	7.95	2.33	2.00						
TCW390U-DS6B	1	870	255	219	5.30	1.55	1.34	115-127/60	RSIR/CSIR*	4.75	8.5	18.7	
	2	1815	532	457	8.05	2.36	2.02						
TCW410U-LS6B**	1	1000	293	252	5.20	1.52	1.31	115/60	RSIR/CSIR*	6.06	8.5	18.7	
	2	2380	698	600	8.00	2.34	2.02						
TCW410U-DS6B	1	1000	293	252	5.35	1.57	1.35	115-127/60	RSIR/CSIR*	6.06	8.5	18.7	
	2	2090	613	597	8.00	2.34	2.02						
TCX413U-DS1B	1	1310	384	330	5.25	1.54	1.32	115-127/60	CSIR	6.93	8.6	19.0	
	2	2700	791	681	7.51	2.20	1.89						
TCX415U-DS1B	1	1470	431	370	5.17	1.51	1.30	115-127/60	CSIR	7.84	8.6	19.0	
	2	3065	898	773	8.50	2.49	2.14						

NOTE: Information for internal reference only.

\*Motor Type: Optional

\*\*Model: Already developed, but values can be adjusted

### Rating Point 1 (ASHRAE 32)

Evap. Temp.: -23.3°C / -10°F  
 Cond. Temp.: 54.4°C / 130°F  
 Return Gas Temp.: 32.2°C / 90°F  
 Liquid Temp.: 32.2°C / 90°F  
 Ambient Temp.: 32.2°C / 90°F

### Rating Point 2 (ASHRAE 32)

Evap. Temp.: -6.7°C / 20°F  
 Cond. Temp.: 54.4°C / 130°F  
 Return Gas Temp.: 32.2°C / 90°F  
 Liquid Temp.: 32.2°C / 90°F  
 Ambient Temp.: 32.2°C / 90°F

### Rating Point 3 (ASHRAE 46)

Evap. Temp.: -6.7°C / 20°F  
 Cond. Temp.: 54.4°C / 130°F  
 Return Gas Temp.: 35°C / 95°F  
 Liquid Temp.: 46.1°C / 115°F  
 Ambient Temp.: 35°C / 95°F

### Rating Point 4 (ASHRAE 46)

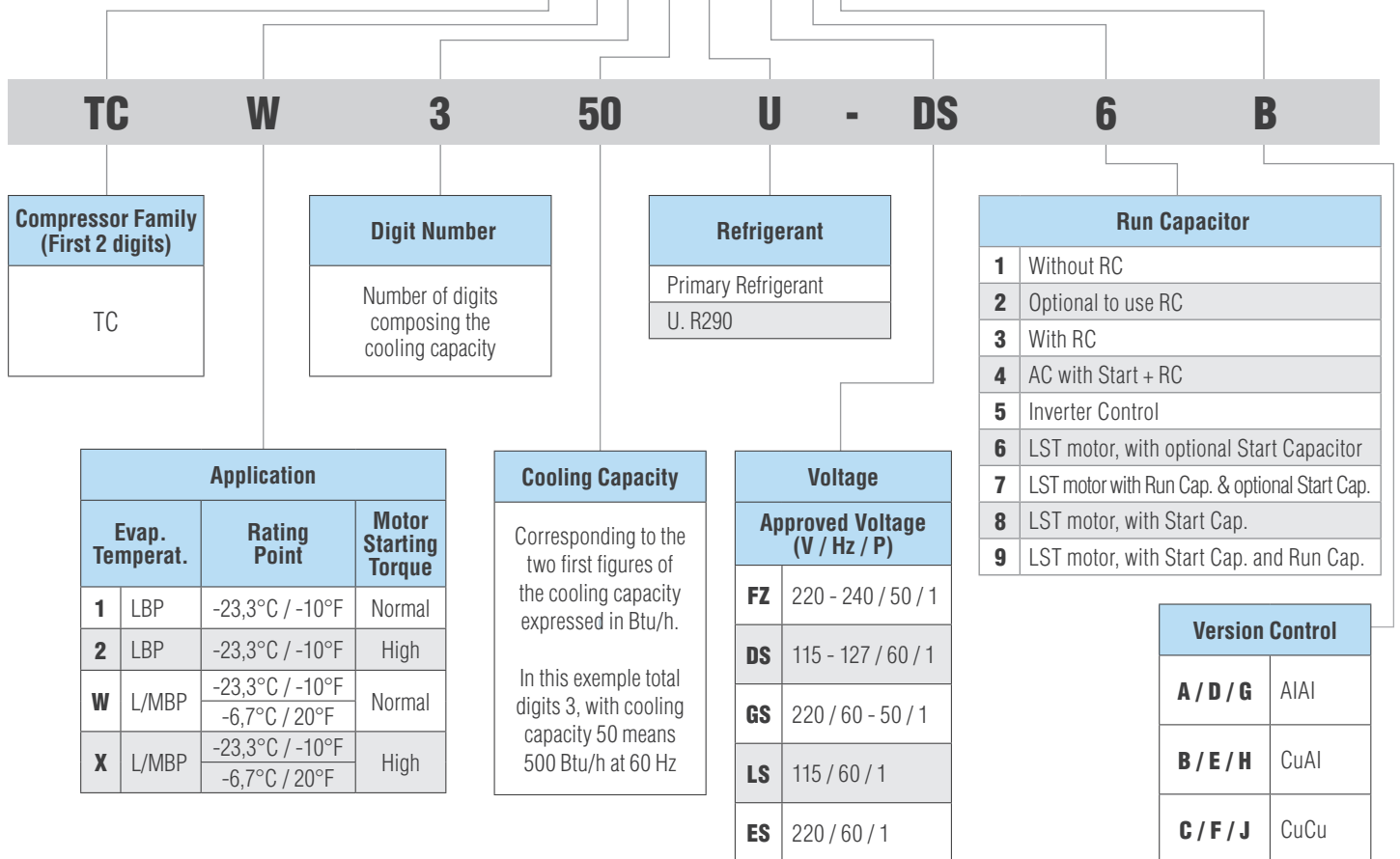
Evap. Temp.: +7.2°C / 45°F  
 Cond. Temp.: 54.4°C / 130°F  
 Return Gas Temp.: 35°C / 95°F  
 Liquid Temp.: 46.1°C / 115°F  
 Ambient Temp.: 35°C / 95°F

Oil Charge: 170ml  
 Oil Type: POE  
 Oil Viscosity  
 (LBP and L/MBP): 10 cSt  
 Oil Viscosity (M/HBP): 32 cSt  
 Cooling: FAN

## Compressor Nomenclature and Dimensions

### TC Compressor Model Nomenclature

#### TCW350U-DS6B

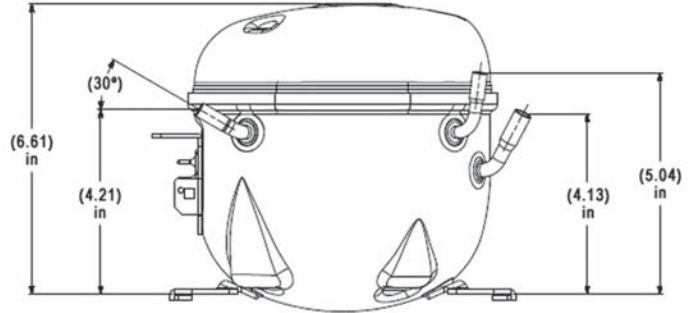
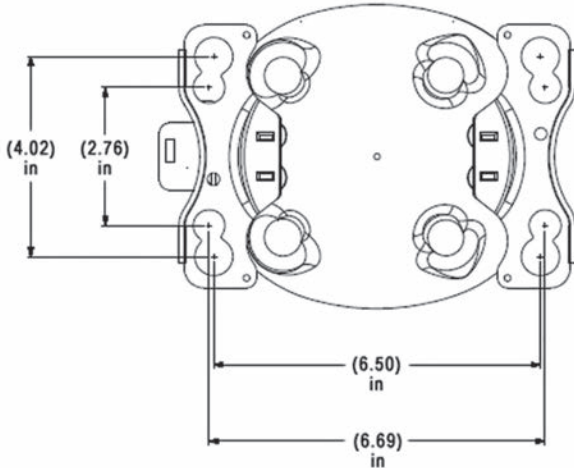


### Application Window

Application Code	Application Pressure	Evaporating Temperature Range											
		-40°F	-31°F	-22°F	-13°F	-4°F	5°F	14°F	23°F	32°F	41°F	50°F	59°F
		-40°C	-35°C	-30°C	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C
1 & 2	LBP												
W & X	L/MBP												

# Compressor Dimensions

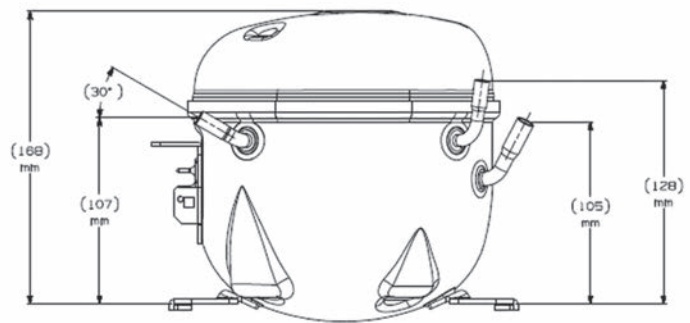
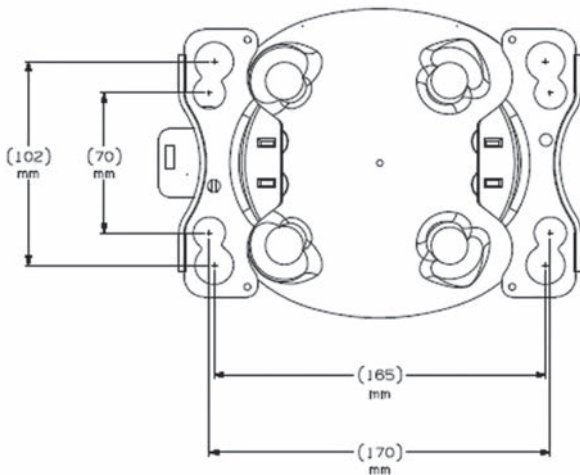
Inches



Universal Model



Millimeters



Universal Model





## TC Tube Connections



Nominal Internal Diameter (mm)		
Suction	Discharge	Process
8.05	6.50	6.50

Tolerance  $\pm 0.05\text{mm}$  in all columns

Nominal Internal Diameter (in)		
Suction	Discharge	Process
0.317	0.256	0.256

Tolerance  $\pm 0.002\text{in}$  in all columns

## TC Tube Position



## TC Packaging

### What is in a Single Pack?



Grommet

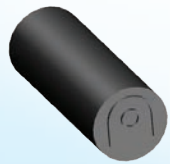
### Check List

- Compressor
- Installation Instruction
- Relay
- Overload
- Start Cap. / Run Cap. (when applicable)
- Protective Cover Screw (when applicable)
- Capacitor Screw (when applicable)
- Mechanical Accessories
- Protective Cover

### What is in an Electrical Box?



Protective Cover



Start / Run Capacitor



Relay



Overload



Protective Cover Support & Screw



Installation Instruction

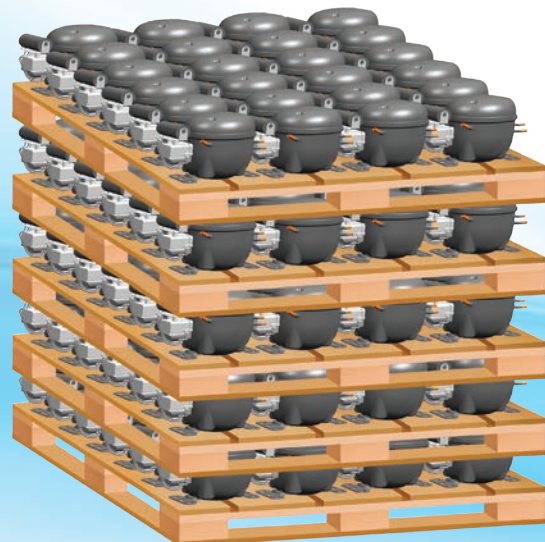
### What is in a Multiple Pack?

**NM** 96 Compressors per Pallet

24 compressors per layers

4 layers per pallet

Installed connection box

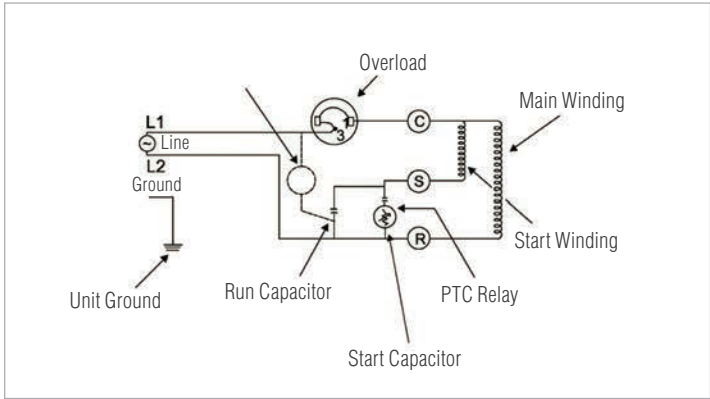
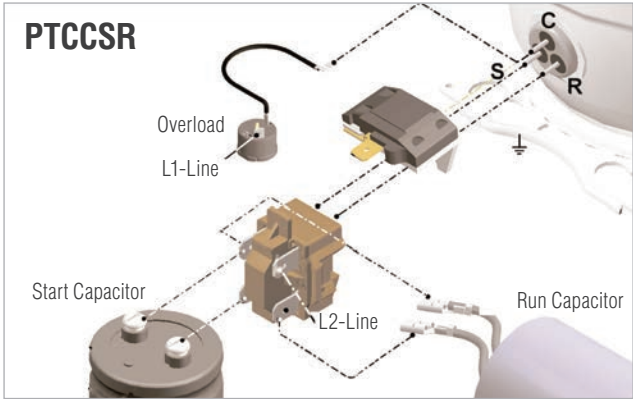


## Installation Instructions

### Wiring Diagrams

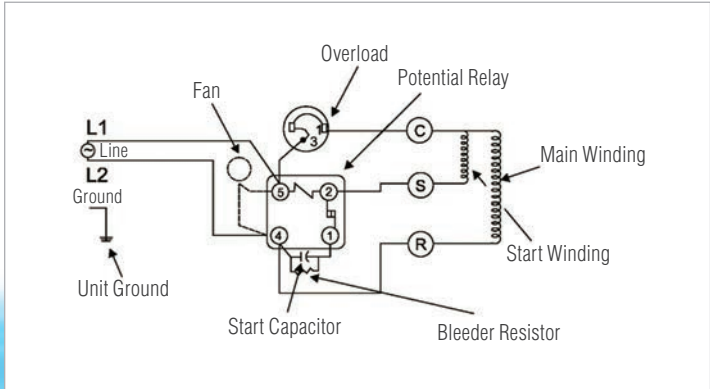
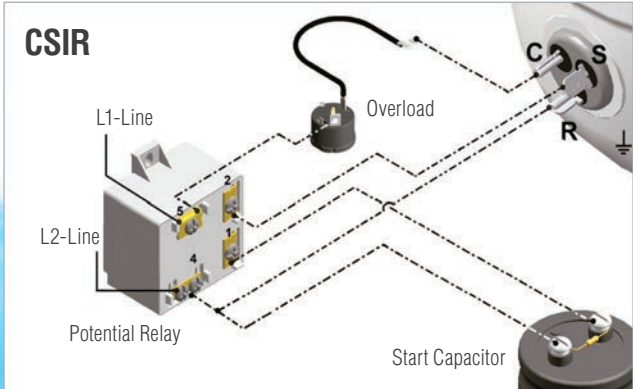
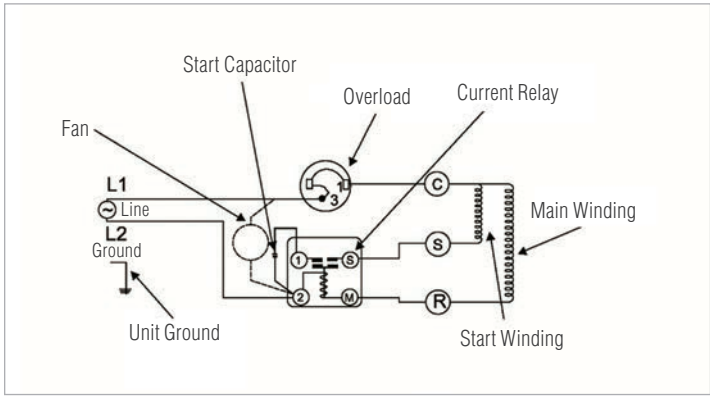
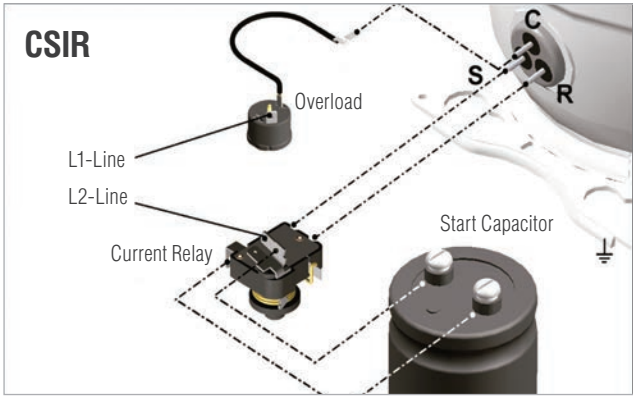
#### Compressors with PTCCSR motor:

The motor operation is similar to the CSR motor, except for the potential relay, which is replaced by the PTC device.



#### Compressors with CSIR motor:

The motors have a high starting torque, using an electrolytic starting capacitor. Recommended for applications with capillary tube or expansion valve systems.



## TECUMSEH NORTH AMERICA

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